

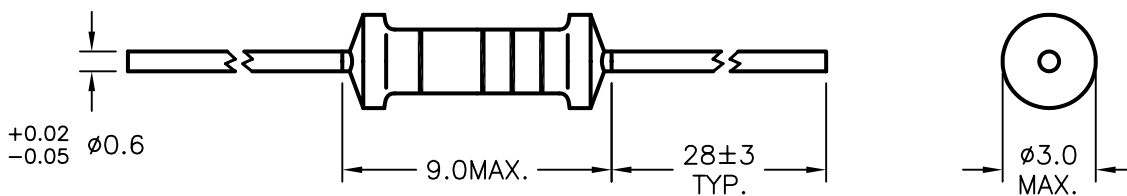
DCP #	REV	DESCRIPTION	DRAWN	DATE	CHECKD	DATE	APPRVD	DATE
1861	A	RELEASED	EYO	11/01/05	HO	11/2/05	JWM	10/31/05



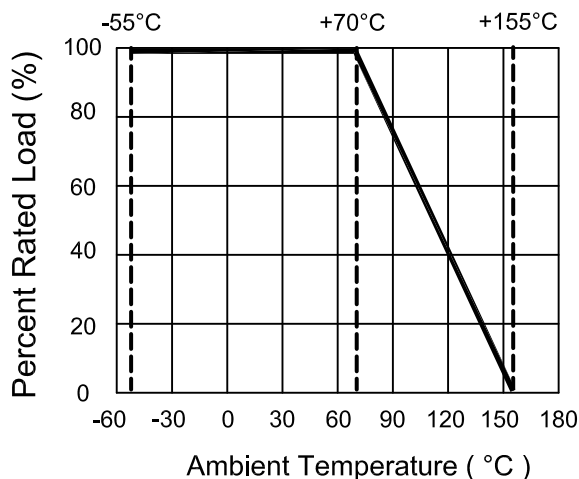
Layer Name	Material
Basic Body	Rod Type Ceramics
Resistance Film	Carbon Film
End Cap	Steel (Tin plated iron surface)
Lead Wire	Annealed copper wire (Electrosolder plated surface) Pb Free
Joint	By Welding
Coating	Insulated resin ( Color : Beige )
Color Code	Epoxy Resin

### SPECIFICATIONS:

- Rating Wattage: .50W @ 70°C
- Working Voltage: 350V Max.
- Overloaded Voltage: 700V Max.
- Dielectric Withstanding Voltage: 700V
- Rated Ambient Temp. : 70°C
- Operating Temp. Range : -55°C ~ +155°C
- Resistance Tolerance: ±5%
- Resistance Range: (See part table)



### Derating Curve



SPC-F004.DWG

TOLERANCES: UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE FOR REFERENCE PURPOSES ONLY.	DRAWN BY: EKLAS ODISH	DATE: 11/01/05	DRAWING TITLE: RoHS Compliant Carbon Film Resistors, 1/2W, 5%			
	CHECKED BY: HISHAM ODISH	DATE: 11/2/05	SIZE A	DWG. NO. TA-670	ELECTRONIC FILE TA-670.DWG	REV A
	APPROVED BY: JEFF MCVICKER	DATE: 10/31/05	SCALE: NTS		U.O.M.: MILLIMETERS	SHEET: 1 OF 3
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	Downloaded from <a href="http://Elcodis.com">Elcodis.com</a> electronic components distributor					

Characteristics	Limits		Test Methods (JIS C 5201-1)															
DC. Resistance	Must be within the specified tolerance		5.1 The limit of error of measuring apparatus shall not exceed allowable range or 5% of resistance tolerance															
Temperature coefficient	Resist. Range	T.C.R (PPM/°C)	5.2 Natural resistance change per temp. degree centigrade. $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \text{ (PPM/°C)}$ R <sub>1</sub> : Resistance value at room temperature (t <sub>1</sub> ) R <sub>2</sub> : Resistance value at room temp. plus 100°C (t <sub>2</sub> )															
	≤10Ω	0 ±350																
	11Ω 99K	0 -450																
	100K 1M	0 -700																
	1.1M 10M	0 -1500																
Short time overload	Resistance change rate is ±(1% +0.05Ω) Max. with no evidence of mechanical damage.		5.5 Permanent resistance change after the application of a potential of 2.5 times RCWV for 5 seconds															
Insulation Resistance	Insulation resistance is 10,000 MΩ Min		5.6 Resistors shall be clamped in the trough of a 90° metallic V-block and shall be tested at DC potential respectively specified in above list for 60+10/-0 seconds															
Dielectric withstanding voltage	No evidence of flashover mechanical damage, arcing or insulation breakdown.		5.7 Resistors shall be clamped in the trough of a 90° metallic V-block and shall be tested at AC potential respectively specified in table '1'. for 60+10/-0 seconds															
Terminal strength	No evidence of mechanical damage.		6.1 Direct load: Resistance to a 2.5 kgs direct load for 10 seconds in the direction of the longitudinal axis of the terminal leads. Twist test: Terminal leads shall be bent through 90° at a point of about 6mm from the body of the resistor and shall be rotated through 360° about the original axis of the bent terminal in alternating directions for a total of 3 rotations.															
Resistance to soldering heat	Resistance change rate is ±(1% +0.05Ω) Max. with no evidence of mechanical damage.		6.4 Permanent resistance change when leads immersed to 3.2 to 4.8mm from the body in 350°C ±10°C solder for 3 ±0.5 seconds.															
Solderability	95% coverage Min.		6.5 The area covered with a new, smooth, clean, shiny and continuous surface free from concentrated pinholes. Test temperature of solder: 245°C ±3°C Dwell time in solder: 2-3 seconds															
Temperature cycling	Resistance change rate is ±(1% +0.05Ω) Max. with no evidence of mechanical damage.		7.4 Resistance change after continuous five cycles for duty shown below : <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Step</th> <th>Temperature</th> <th>Time (min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55°C ±3°C</td> <td>30</td> </tr> <tr> <td>2</td> <td>Room Temp.</td> <td>10 ~ 15</td> </tr> <tr> <td>3</td> <td>+155°C ±2°C</td> <td>30</td> </tr> <tr> <td>4</td> <td>Room Temp.</td> <td>10 ~ 15</td> </tr> </tbody> </table>	Step	Temperature	Time (min)	1	-55°C ±3°C	30	2	Room Temp.	10 ~ 15	3	+155°C ±2°C	30	4	Room Temp.	10 ~ 15
Step	Temperature	Time (min)																
1	-55°C ±3°C	30																
2	Room Temp.	10 ~ 15																
3	+155°C ±2°C	30																
4	Room Temp.	10 ~ 15																
Load life in humidity	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">Resistance Value</th> <th>ΔR/R</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Normal Type</td> <td>&lt; 100KΩ</td> <td>±3%</td> </tr> <tr> <td>≥ 100KΩ</td> <td>±5%</td> </tr> </tbody> </table>	Resistance Value		ΔR/R	Normal Type	< 100KΩ	±3%	≥ 100KΩ	±5%	7.9 Resistance change after 1,000 hours operating at RCWV with duty cycle of (1.5 hours "ON, 0.5 hour "OFF" ) in a humidity test chamber controlled at 40°C±2°C and 90 to 95% relative humidity.								
Resistance Value		ΔR/R																
Normal Type	< 100KΩ	±3%																
	≥ 100KΩ	±5%																
Load life	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">Resistance Value</th> <th>ΔR/R</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Normal Type</td> <td>&lt; 56KΩ</td> <td>±2%</td> </tr> <tr> <td>≥ 56KΩ</td> <td>±3%</td> </tr> </tbody> </table>	Resistance Value		ΔR/R	Normal Type	< 56KΩ	±2%	≥ 56KΩ	±3%	7.10 Permanent resistance change after 1,000 hours operating at * RCWV with duty cycle of 1.5 hours "on", 0.5 hour "off" at 70°C ±2°C ambient.								
Resistance Value		ΔR/R																
Normal Type	< 56KΩ	±2%																
	≥ 56KΩ	±3%																

\*RCWV = Rated Continuous Working Voltage =  $\sqrt{\text{Rated Power} \times \text{Resistance Value}}$

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SPC-F004.DWG

SIZE DWG. NO.

A

TA-670

ELECTRONIC FILE

TA-670.DWG

REV

A

DOC. NO. SPC-F004 \* Effective: 7/8/02 \* DCP No: 1398

SCALE: NTS

U.O.M.: Millimeters

SHEET: 2 OF 3

Multicomp P/N #	Resistance
MCCFROS2J050KA20	0.5 ohm
MCCFROS2J010JA20	1 ohm
MCCFROS2J012JA20	1.2 ohm
MCCFROS2J013JA20	1.3 ohm
MCCFROS2J015JA20	1.5 ohm
MCCFROS2J016JA20	1.6 ohm
MCCFROS2J018JA20	1.8 ohm
MCCFROS2J020JA20	2 ohm
MCCFROS2J022JA20	2.2 ohm
MCCFROS2J024JA20	2.4 ohm
MCCFROS2J027JA20	2.7 ohm
MCCFROS2J030JA20	3 ohm
MCCFROS2J033JA20	3.3 ohm
MCCFROS2J036JA20	3.6 ohm
MCCFROS2J039JA20	3.9 ohm
MCCFROS2J043JA20	4.3 ohm
MCCFROS2J047JA20	4.7 ohm
MCCFROS2J051JA20	5.1 ohm
MCCFROS2J056JA20	5.6 ohm
MCCFROS2J062JA20	6.2 ohm
MCCFROS2J068JA20	6.8 ohm
MCCFROS2J075JA20	7.5 ohm
MCCFROS2J082JA20	8.2 ohm
MCCFROS2J091JA20	9.1 ohm
MCCFROS2J0100A20	10 ohm
MCCFROS2J0110A20	11 ohm
MCCFROS2J0120A20	12 Ohm
MCCFROS2J0130A20	13 ohm
MCCFROS2J0150A20	15 ohm
MCCFROS2J0160A20	16 ohm
MCCFROS2J0180A20	18 ohm
MCCFROS2J0200A20	20 ohm
MCCFROS2J0220A20	22 ohm
MCCFROS2J0240A20	24 ohm
MCCFROS2J0270A20	27 ohm
MCCFROS2J0300A20	30 ohm
MCCFROS2J0330A20	33 ohm
MCCFROS2J0360A20	36 ohm
MCCFROS2J0390A20	39 ohm
MCCFROS2J0430A20	43 ohm
MCCFROS2J0470A20	47 ohm
MCCFROS2J0510A20	51 ohm
MCCFROS2J0560A20	56 ohm
MCCFROS2J0620A20	62 ohm
MCCFROS2J0680A20	68 ohm
MCCFROS2J0750A20	75 ohm
MCCFROS2J0820A20	82 ohm
MCCFROS2J0910A20	91 ohm
MCCFROS2J0101A20	100 ohm
MCCFROS2J0111A20	110 ohm
MCCFROS2J0121A20	120 ohm
MCCFROS2J0131A20	130 ohm
MCCFROS2J0151A20	150 ohm
MCCFROS2J0161A20	160 ohm
MCCFROS2J0181A20	180 ohm
MCCFROS2J0201A20	200 ohm
MCCFROS2J0221A20	220 ohm

Multicomp P/N #	Resistance
MCCFROS2J0241A20	240 ohm
MCCFROS2J0271A20	270 ohm
MCCFROS2J0301A20	300 ohm
MCCFROS2J0331A20	330 ohm
MCCFROS2J0361A20	360 ohm
MCCFROS2J0391A20	390 ohm
MCCFROS2J0431A20	430 ohm
MCCFROS2J0471A20	470 ohm
MCCFROS2J0511A20	510 ohm
MCCFROS2J0561A20	560 ohm
MCCFROS2J0621A20	620 ohm
MCCFROS2J0681A20	680 ohm
MCCFROS2J0751A20	750 ohm
MCCFROS2J0821A20	820 ohm
MCCFROS2J0911A20	910 ohm
MCCFROS2J0102A20	1 kohm
MCCFROS2J0112A20	1.1 kohm
MCCFROS2J0122A20	1.2 kohm
MCCFROS2J0132A20	1.3 kohm
MCCFROS2J0152A20	1.5 kohm
MCCFROS2J0162A20	1.6 kohm
MCCFROS2J0182A20	1.8 kohm
MCCFROS2J0202A20	2 kohm
MCCFROS2J0222A20	2.2 kohm
MCCFROS2J0242A20	2.4 kohm
MCCFROS2J0272A20	2.7 kohm
MCCFROS2J0302A20	3 kohm
MCCFROS2J0332A20	3.3 kohm
MCCFROS2J0362A20	3.6 kohm
MCCFROS2J0392A20	3.9 kohm
MCCFROS2J0432A20	4.3 kohm
MCCFROS2J0472A20	4.7 kohm
MCCFROS2J0512A20	5.1 kohm
MCCFROS2J0562A20	5.6 kohm
MCCFROS2J0622A20	6.2 kohm
MCCFROS2J0682A20	6.8 kohm
MCCFROS2J0752A20	7.5 kohm
MCCFROS2J0822A20	8.2 kohm
MCCFROS2J0912A20	9.1 kohm
MCCFROS2J0103A20	10 kohm
MCCFROS2J0113A20	11 kohm
MCCFROS2J0123A20	12 kohm
MCCFROS2J0133A20	13 kohm
MCCFROS2J0153A20	15 kohm
MCCFROS2J0163A20	16 kohm
MCCFROS2J0183A20	18 kohm
MCCFROS2J0203A20	20 kohm
MCCFROS2J0223A20	22 kohm
MCCFROS2J0243A20	24 kohm
MCCFROS2J0273A20	27 kohm
MCCFROS2J0303A20	30 kohm
MCCFROS2J0333A20	33 kohm
MCCFROS2J0333T50	33 kohm
MCCFROS2J0363A20	36 kohm
MCCFROS2J0393A20	39 kohm
MCCFROS2J0433A20	43 kohm
MCCFROS2J0473A20	47 kohm

Multicomp P/N #	Resistance
MCCFROS2J0513A20	51 kohm
MCCFROS2J0563A20	56 kohm
MCCFROS2J0623A20	62 kohm
MCCFROS2J0683A20	68 kohm
MCCFROS2J0753A20	75 kohm
MCCFROS2J0823A20	82 kohm
MCCFROS2J0913A20	91 kohm
MCCFROS2J0104A20	100 kohm
MCCFROS2J0114A20	110 kohm
MCCFROS2J0124A20	120 kohm
MCCFROS2J0134A20	130 kohm
MCCFROS2J0154A20	150 kohm
MCCFROS2J0164A20	160 kohm
MCCFROS2J0184A20	180 kohm
MCCFROS2J0204A20	200 kohm
MCCFROS2J0224A20	220 kohm
MCCFROS2J0244A20	240 kohm
MCCFROS2J0274A20	270 kohm
MCCFROS2J0304A20	300 kohm
MCCFROS2J0334A20	330 kohm
MCCFROS2J0364A20	360 kohm
MCCFROS2J0394A20	390 kohm
MCCFROS2J0434A20	430 kohm
MCCFROS2J0474A20	470 kohm
MCCFROS2J0514A20	510 kohm
MCCFROS2J0564A20	560 kohm
MCCFROS2J0624A20	620 kohm
MCCFROS2J0684A20	680 kohm
MCCFROS2J0684T50	680 kohm
MCCFROS2J0754A20	750 kohm
MCCFROS2J0824A20	820 kohm
MCCFROS2J0914A20	910 kohm
MCCFROS2J0105A20	1 Mohm
MCCFROS2J0115A20	1.1 Mohm
MCCFROS2J0125A20	1.2 Mohm
MCCFROS2J0135A20	1.3 Mohm
MCCFROS2J0155A20	1.5 Mohm
MCCFROS2J0165A20	1.6 Mohm
MCCFROS2J0185A20	1.8 Mohm
MCCFROS2J0205A20	2 Mohm
MCCFROS2J0225A20	2.2 Mohm
MCCFROS2J0245A20	2.4 Mohm
MCCFROS2J0275A20	2.7 Mohm
MCCFROS2J0305A20	3 Mohm
MCCFROS2J0335A20	3.3 Mohm
MCCFROS2J0365A20	3.6 Mohm
MCCFROS2J0395A20	3.9 Mohm
MCCFROS2J0435A20	4.3 Mohm
MCCFROS2J0475A20	4.7 Mohm
MCCFROS2J0515A20	5.1 Mohm
MCCFROS2J0565A20	5.6 Mohm
MCCFROS2J0625A20	6.2 Mohm
MCCFROS2J0685A20	6.8 Mohm
MCCFROS2J0755A20	7.5 Mohm
MCCFROS2J0825A20	8.2 Mohm
MCCFROS2J0915A20	9.1 Mohm
MCCFROS2J0106A20	10 Mohm

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